A REVIEW OF MYRMECOPHILIC-SYMPHILIC DIAPRIID WASPS IN THE HOLARCTIC REALM, WITH DESCRIPTIONS OF NEW TAXA AND A KEY TO GENERA (HYMENOPTERA: PROCTOTRUPOIDEA: DIAPRIIDAE)

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Abstract

Myrmecophilic-symphilic members of twelve genera of the tribe Diapriini (Diapriidae) in the Holarctic realm are compared and keyed. The following new taxa are described: *Labidopria noctivaga*, n. sp. (Arizona), *Plagiopria*, n. gen., with *P. passerai*, n. sp. (France, Italy), *P. besucheti*, n. sp. (Turkey) and *P. huberi*, n. sp. (Iran), *Townesella*, n. gen., with *T. marjoriae*, n. sp. (Arizona), and *Trichopria myrmicae*, n. sp. (New York). The previously unknown male of *Ecitovagus gibbus* Masner is described. The first known diapriid associates of ants of the genera *Myrmica* Latreille and *Plagiolepis* Mayr are described; *Plagiopria passerai* is the first diaprid positively reared from an ant (queen pupa). Available host records and myrmecophilic habits of the wasps involved are discussed. A working hypothesis to interpret the possible interrelationships between the ants and wasps is presented.

INTRODUCTION

Initially, the aim of this paper was only to describe a few new taxa of myrmecophilic Diapriini. However, as the work progressed it became obvious that a critical review of all the genera involved and information accumulated was desirable. As a result the myrmecophilic-symphylic members of twelve genera (two of which are described here as new) known to occur in the Holarctic realm were studied, compared and keyed. The present paper is focused on highly integrated associates of ants, the symphiles as interpreted by Masner (1977). Consequently, the non-symphilic associates such as the synoekets or adventitious species of diapriid wasps are not considered. We suspect that at least some of the frequent records of diapriine wasps in ant nests (Kieffer 1916; Donisthorpe 1927) account for either the parasite's search for dipterous hosts or for temporary shelter (e.g. hibernation).

Five symphilic genera are restricted to the Palearctic region, *viz*., *Cordylocras* Kozlov, *Lepidopria* Kieffer, *Plagiopria*, n. gen., *Solenopsia* Wasmann, and *Tetramopria* Wasmann, and six symphilic genera are exclusively Nearctic, *viz*., *Auxopaedeutes* Brues, *Bruesopria* Wing, *Ecitovagus* Masner, *Labidopria* Wasmann, *Myrmecopria* Ashmead and *Townesella*, n. gen. All these genera are either monotypic or contain only a few described species. Only the large world-wide genus *Trichopria* Ashmead (*s. l.*) with numerous non-myrmecophilic species is represented in both the Palaearctic and Nearctic regions by one species each positively associated with ants. Whereas the

Palearctic genera seem to constitute a rather homogenous complex, the Nearctic genera appear to be sharply divided into two groups. *Auxopaedeutes* and *Bruesopria* are closely related to the Palearctic genera *Lepidopria* and *Solenopsia* because of non-compressed tarsi and an abrupt antennal clava in the female. *Ecitovagus*, *Labidopria*, *Myrmecopria*, and *Townesella* on the other hand, show distinct ties to several Neotropical ecitophilic genera (Masner 1977) because of compressed tarsi and a non-abrupt multisegmented antennal clava in the female. We believe that all symphilic members of the above genera can be derived from different species-groups of the polytypic genus *Trichopria s. l.* In our opinion social integration is the driving force in this evolution.

Three groups of ants are involved as the main hosts of myrmecophilic diapriines, *viz.* the Myrmicinae, Formicinae and Dorylinae. Among the Myrmicinae the genera *Solenopsis* Westwood, *Tetramorium* Mayr, and possibly also *Myrmica* Latreille have integrated diapriines. Formicine hosts include the genera *Formica* Linné, *Camponotus* Mayr, *Lasius* Fabricius and *Plagiolepis* Mayr. However, only *Plagiolepis* is proven here to be a real host while the other genera may be just circumstantial records (e.g. numerous species of *Trichopria* and *Basalys* (=*Loxotropa* acut.)(Kieffer 1916). The doryline ants of the tribe Ecitonini in the New World such as the genera *Labidus* Jurine, *Neivamyrmex* Borgmeier, *Nomamyrmex* Borgmeier and *Eciton* Latreille host a large number of highly specialized diapriine symphiles (Borgmeier 1939; Ferriere 1929; Loiacono 1981). This specialization is highlighted by phenomena such as mimicry, alectomy, dual phase of adult life, complete social integration into ant communities, etc.

We presume that the *Trichopria*-like ancestors of extant ecitophilic symphiles gradually shifted from parasitizing dipterous hosts in general to parasitizing ecitonine ants. The intermediate step in this presumed sequence of hosts seems to be the numerous synoeketic Diptera living in the refuse depots and bivouacs of various army ants (Wilson 1972). The presumed life cycle of a diapriine symphile consists of three phases, *viz.* postembryonic, dispersal and social (Fig. 1). Following completion of postembryonic development in the ant brood, the fully winged wasps (F, M) emerge from the ant nest and are subsequently engaged in nuptial and dispersal flights. These flights are largely nocturnal as documented by frequent interceptions of wasps in UV light traps. During the peak of this slight alectomy evidently begins, as individuals joining the ants are already dealated and the individuals attracted to light traps show various degrees of dealation. In the third (social) phase the wasps assume new functions such as taking part in raids and other activities as members of the ant society. Sometimes during this phase the wasps parasitize ant brood. Most species seem to have males only facultatively or not at all. To date only *Ecitovagus gibbus* Masner is shown here to have dealated males in the third phase of the life cycle.

The known bionomics of the non-ecitophilic genera of myrmecophilic Diapriinae present a very interesting enigma. Based on the classical works on myrmecophilism by Erich Wasmann at the turn of this century, members of these genera are generally believed to be true myrmecophiles (symphiles), possibly parasites of ants. This belief was based primarily on a high degree of integration of these wasps with the host ants, the adaptations being both morphological and behavioural. However, until now there has been no positive rearing record of diapriines parasitizing any stages of host ants (Wing 1951). *Plagiopria passerai*, n. gen. et n. sp. is the first diapriine reared from a host ant. Luc Passera (Toulouse *in lit.*) reports the above wasp as reared from the ant *Plagiolepis pygmaea* (Latreille): "Ils (5 F) sont tous sortis de coccons de reine de cette fourmi au laboratoire". On the contrary, there are several well documented host records of members of genera having myrmecophilic species reared from puparia of various Tachinidae (Diptera). Both sexes of *Tetramopria aurocincta* Wasmann were reared from a puparium of *Compsilura concinnata* Meigen, a primary parasite of the fall webworm, *Hyphantria cunea* (Drury), in Hungary (Szelēnyi 1957). Later, the same species of wasp was reared again under similar circumstances in Czechoslovakia (Masner *in* Jasič 1964). The senior author examined a series of *Tetramopria aurocincta* labelled "Obtenu de graines *Phlox* nains" in [MNH], Geneve. An interesting case of simultaneous parasitism by *Lepidopria pedestris* Kieffer and *Trichopria inquilina* Kieffer on a tachinid puparium in an adult may beetle, *Melolontha melolontha* Linne is known to us from Yugoslavia (specimens in Nat. Museum, Praha). Bures (1916) described *Lepidopria aberrans* from a puparium of the tachinid *Cryptomeigenia theutis* (Walker) found in a dead adult june beetle, *Phyllophaga inversa* (Horn), in the USA; examination of the unique type (USNM, on slide) of Brues' species indicates that it probably belongs to *Bruesopria* Wing. Several specimens of *Auxopaedeutes* sp. reared from cocoons of a diprionid sawfly (? parasitized by a tachinid) were studied by the junior author (USNM, Washington).

The above conflicting evidence poses an interesting biological problem. What is the role of these highly integrated wasps in ant societies and what are their true hosts? Diapriines are, except for few problematic records, primary parasites of various cyclorrhaphous Diptera. Therefore, we are inclined to believe that the female wasps, while pursuing the potential dipterous hosts in the soil, may enter ant nests. Gradually, during this process, the wasps have become increasingly associated and integrated with the ants. Initially, this gave a wasp a choice of parasitizing either dipterous puparia or the similarly shaped ant brood. The shift from dipterous to formicid hosts also has determined the degree of integration which in turn controls the mechanism of morphological and behavioural specialization. The twelve myrmecophilic-symphilic genera discussed in this paper display various degrees of social integration and specialization.

This paper deals primarily with new taxa, however, for data concerning type-species, synonymies, etc. of the genera dealt with in the following key, see Muesebeck and Walkley (1956).

ABBREVIATIONS OF MUSEUMS

CNC - Canadian National Collection of Insects, Ottawa, Canada.
FMCH - Field Museum, Chicago, USA.
HUGG - Collection Lars Huggert, Lund, Sweden.
LPT - Collection Luc Passera, Toulouse, France.
MCV - Museo Civico di Storia Naturale, Verona, Italy.

MNH - Musee d'Histoire Naturelle, Geneve, Switzerland.
UAT - University of Arizona, Tucson, USA.
USNM - United States National Museum of Natural History, Washington, USA.

KEY TO GENERA OF MYRMECOPHILIC-SYMPHILIC DIAPRIINAE IN HOLARCTIC REALM

1. Anterior margin of T2 (between corners) at most as wide as petiole (Figs. 2, 3, 17, 18); tarsi strongly compressed laterally, with tarsomeres much higher than wide; female antenna with undifferentiated 7-8 segmented clava (Figs. 20, 21); anterior margin of S2 apparently without longitudinal groove-like invaginations; rufous or xanthic forms associated with ecitonine ants in New World 2

   Anterior margin of T2 (between corners) moderately to distinctly wider than petiole (Figs. 4-7, 30); tarsi cylindrical, with tarsomeres about as high as wide (except in *Plagiopria huberi*); female antenna usually with abrupt 2-4 segmented clava (Figs. 23, 24, 39); anterior margin of S2 usually with two more or less distinct groove-like invaginations; associated with myrmicine and formicine ants in both Old and New Worlds 5

2. Head and mesosoma including tegulae mat, granulose-rugulose; mesoscutum with high hump anteromedially; propodeum much protruded posteromedially (Fig. 3); A3 in female 3x longer than A2. Only one species, *E. gibbus* Masner associated with *Neivamyrmex nigrescens* (Cresson) in Arizona (M, F) . . . . *Ecitovagus* Masner

   Head and mesosoma at least partly smooth and shining, with tegulae smooth; mesoscutum not humped anteromedially; propodeum not protruded posteromedially (Figs. 2, 17, 18); A3 in female as long as or only slightly longer than A2 (Figs. 20, 21) 3

3. Head globose, slightly wider than long, with all ocelli inside ocular zone (Fig. 15); petiole with distinct tooth anteromedially (Fig. 13); female antenna 12-segmented, with apical segment very small (Fig. 21); mid coxae with dense tuft of hairs interoapically (only in *L. noctivaga*, n. sp.). Several undescribed Neotropical species; *L. longicornis* Wasmann (Brazil) and *L. costaricana* Borgmeier (Costa Rica) both with *Eciton praedator* F. Smith. Only *L. noctivaga*, n. sp. in Arizona. (F) . . . . *Labidopria* Wasmann

   Head slightly to distinctly elongate, with posterior ocelli clearly outside ocular zone (Fig. 16); petiole without tooth anteromedially; female antenna 11-segmented, with apical segment enlarged (Fig. 20); mid coxae without dense tuft of hairs interoapically 4

4. Head in dorsal view with temples subparallel, broadest at occiput; head with distinct irregular sculpture and with transverse sinuate ridge on frons; pronotal shoulders rounded; dorsal apices of tibiae strongly projecting, tooth-like. Only *M. mellea* (Ashmead) associated with *Neivamyrmex opacithorax* (Emery) and *N. carolinense* (Emery) in Southeastern USA. (M, F) . . . . *Myrmecopria* Ashmead

   Head in dorsal view with temples converging towards occiput, broadest across eyes (Fig. 16); head smooth and shining, without transverse

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M = Male; F = Female.

ridge on frons (Fig. 14); pronotal shoulders angularly protruding (Figs. 16, 19); tibial apices not projecting. Only *T. marjoriae*, n. sp. in Arizona. (F). . . . . *Townesella*, n. gen.

5. Head in dorsal view posteromedially strongly tooth-like projecting, between this projection and bluntly backwards projecting temples occiput deeply excavate (Figs. 25, 26); pronotum with horn-like projecting shoulders (Fig. 27). Only *C. mirabilis* Kozlov in Azerbaijan and Crimea. (F) . . . . *Cordylocras* Kozlov

Head in dorsal view more or less globose, without projections or depressions; pronotal shoulders not projecting 6

6. Petiole in lateral view humped dorsally, distinctly elevated above level of anterior margin of T2 (Figs. 9-11) 7

Petiole in lateral veiw not humped, cylindrical, not elevated above level of anterior margin of T2 (Figs. 8, 12) 9

7. Petiole in dorsal view distinctly broadened posteriorly (Fig. 4); propodeum anteromedially with sharp triangular keel (Fig. 9); female antenna 11-segmented, with 2-segmented clava; genae ventrally with thick brush of short setae. Only *S. imitatrix* Wasmann, associated with *Solenopsis fugax* Latreille in Europe. (M, F) . *Solenopsia* Wasmann

Petiole in dorsal view not broadened posteriorly (Figs. 5, 6); propodeum anteromedially without elevated keel (Figs. 10, 11); female antenna 11- or 12-segmented, with 3- or 4-segmented clave; genae ventrally at most with sparse silvery hairs 8

8. Propodeum deeply excavated posteriorly with flanges elevated, propodeum very short medially, with no median keel (Fig. 5); petiole with hump directed backwards concealing anterior margin of T2 at meson (Figs. 5, 11); female antenna 11-segmented, with abrupt 3-segmented clava. Only *B. americana* (Brues) and *B. seeversi* Wing, associated with *Solenopsis molesta* (Say) in North America. (F) . . *Bruesopria* Wing

Propodeum not excavate posteriorly, without flanges, longer medially, with distinct median keel (Fig. 6); petiole with hump directed upwards not concealing anterior margin of T2 at meson (Figs. 6, 10); female antenna 12-segmented, with distinct 4-segmented clava. Only *L. pedestris* Kieffer, associated with *Solenopsis fugax* Latreille in Europe. (M, F) . . . . *Lepidopria* Kieffer

9. Propodeum deeply excavated dorsomedially, with prominent flanges at sides (Figs. 7, 30) 10

Propodeum at most slightly concave posteromedially, with no specialized flanges at sides (Fig. 45) 11

10. Hind tibia strongly compressed laterally, with sharp blade-like edges in proximal ventral halves (Figs. 32, 36); petiole more or less glabrous and smooth dorsally, with short to long hairs posterolaterally (Figs. 8, 30, 35, 37); scape reticulate; male A5-A14 distinctly elongate (Fig. 33). *P. passerai*, n. sp., associated with *Plagiolepis pygmaea* (Latreille) in S. Europe, *P. besucheti*, n. sp. (Turkey) and *P. huberi*, n. sp. (Iran). (M, F) . . . . *Plagiopria*, n. gen.

Hind tibia not compressed laterally, with no sharp edges ventrally; petiole dorsally with minute scales and dense long hairs (Fig. 7); scape smooth; male A5-A14 penicillate. Six species in N. America, *A. sodalis* Brues and *B. lyriformis* Brues associated with *Solenopsis molesta* (Say). (M, F) . . . . *Auxopaedeutes* Brues

11. Head in dorsal view sub-hexagonal, with sides almost straight; tufts on pronotum and temples golden yellow; eyes remarkably small. Two species, *T. aurocincta* Kieffer and *T. cincticollis* Wasmann associated with *Tetramorium caespitum* (Linné) in Europe. (M, F) . . . . *Tetramopria* Wasmann

Head in dorsal view usually globose, with sides rounded; tufts on pronotum and temples whitish; eyes usually larger. Several species reported as associated with ants in Europe (Kieffer 1916; Pschorn-Walcher 1957, Dessart 1975), *T. inquilina* (Kieffer) with *Solenopsis fugax* Latreille in Europe and *T. myrmicae*, n. sp. with *Myrmica americana* Weber in N. America. (M, F) . . . . *Trichopria* Ashmead

1. **Labidopria noctivaga**, n. sp. (Figs. 13, 15, 17, 21)

Female: Length about 1.9 mm. Honey colored, with metasoma slightly darker, eyes and ocelli blackish and all sutures dark brown; wings hyaline; body predominantly smooth and shining, with scattered long semidecumbent setae.

Head (36:42) smooth and shining; in dorsal view eyes distinctly longer than strongly receding and rounded temples (Fig. 15); temples without pilosity; ocelli inside ocular zone; POL:LOL:OOL = 6:5:10; occipital collar unusually narrow; eyes in lateral view higher than long (23:18), with 12 and 8 ommatidia respectively; rather raspberry-like; malar space shorter than length of eyes (13:18) (Fig. 13); mouth small, mandibles bidentate, with lower tooth sharp, considerably longer than upper tooth; palpi short, formula 3-2; hypostomal carina fine, not particularly projecting; antenna without differentiated clava (Fig. 21), A4-A12 subquadratic, closely approximated; A12 unusually small, shorter than preceding segment; apical rims of A4-A11 with irregular sprockets; flagellomeres with delicate granular microsculpture except for smooth spot on A1 apicoventrally (between flanges); scape reticulate, seen dorsally distinctly compressed basally, gradually incrassate towards apex, with rather large apical flange housing pedicel in flexed position; antennomeres in relative proportions 35:10; 8:7; 10:8; 7.5:8.5; 7:9; 7:9.5; 7:10; 7.5:10; 7.5:10; 7.5:10; 8:10; 6.5:7.

Mesosoma as high as wide; mesoscutum wider than long (19:12); pronotal shoulders smooth and glabrous, slightly angularly projecting; small tuft of yellow hairs below pronotal shoulders; scutellar pit shallow, inconspicuous; axillae and scutellar shield subcircular, lateral margins of shield delicate; propodeum short, shorter than scutellar shield (13:17), with no central keel or plicae and with posterolateral corners not projecting, with minute semitransparent flanges (Fig. 17); propleura with sparse whitish pilosity; anterior margin of pronotum with no tuft; metapleura and sides of propodeum with only few scattered long setae; metapleura smooth, with deep depression anterodorsally connecting to depression between metanotum and propodeum; metapleural carina not clearly defined; mid coxae apically with dense tuft of yellowish hairs interoventrally; hind coxae unusually long (29:11), subcylindrical; marginal cilia of fore wing 1/5 of wing width; fore wing surpassing metasoma by half of its length.

Petiole (25:13) in dorsal view subcylindrical, distinctly constricted at apex widest in posterior third, with fine granular sculpture dorsally and rougher sculpture laterally; in lateral view petiole with prominent tooth anteroventrally (Fig. 13); rest of metasoma short, only slightly longer than wide (67:45).

Male: Unknown.

Biology: Unknown; caught in UV light trap in semidesert habitat; presumably associated with army ants.

Variability: The specimens are very uniform in all respects and no substantial variation was encountered.

Distribution: Arizona.

Type material: *Holotype*: Female, USA, Arizona, Pima Co., 8 mi. N. Vail, Aug. 30, 1962 (F. Werner & W. L. Nutting) [USNM]. *Paratypes* : 4 F, USA, Arizona, Brown Co., Baboquivari Mts., Aug. 4, 1962 (F. Werner & P. Johnson); USA, Arizona, Pena Blanca, Sta. Cruz Co., July 10, 1961 (F. Werner & W. L. Nutting); USA, Arizona, Tumacacori, Santa Cruz Co. April 10, 1975 (G. Ginelly) [CNC No. 17551, UAT, HUGG].

Etymology: The name of this new species refers to its presumed nocturnal dispersal flight preceeding the wing autotomy and presumed association with some species of army ants.

Remarks: This new species is placed in *Labidopria* with some reservation. It differs from all described as well as several undescribed species of the genus in having a strong tooth situated anteroventrally on the petiole and tufts of hairs on the mid coxae. Furthermore, the new species differs from *L. longicornis* Wasmann (type-species of *Labidopria*) and *L. costaricana* Borgmeier by having a minute propodeal flange, narrow occipital collar, as well as by having a different shape of petiole. *L. noctivaga* is the northernmost species of *Labidopria*, and at the same time the first record of the genus from America north of Mexico.

TOWNESELLA, new genus

(Figs. 14, 16, 18, 19, 20)

Female: Body honey yellow, predominantly smooth and shining, with scattered long semidecumbent setae; head in dorsal view slightly longer than wide, subhexagonal, with temples straight but somewhat convergent and with antennal shelf small; at least posterior ocelli outside ocular zone (Fig. 16); eyes large, with raspberry ommatidia; mouth small, mandibles bidentate, with lower tooth sharp and much longer than upper tooth; palpi short, with formula 3-2; hypostomal carina fine, not particularly projecting; clypeus not delimited above; temples behind without pilosity but with small area of granular sculpture appearing as minute sharp points (Fig. 19); antenna (Fig. 20) 11-segmented, without differentiated clava, with antennomeres A4-A10 subquadratic, closely approximated; all considerably longer than preceeding segments; apical rims of A4-A10 with irregular sprockets; scape reticulate, somewhat compressed basally (dorsal view), with minute apical flange.

Mesosoma slightly flattened dorsally and in dorsal view rather narrow (Figs. 14, 16); pronotal shoulders distinctly prominent, rounded, with delicate granular microsculpture similar to that on temples; notauli absent, mesoscutum with setae in two submedian rows; scutellum with large subrectangular, moderately deep pit, with scutellar shield subcircular with setae in two submedian rows; scutellum with large subrectangular, moderately deep pit, scutellar shield subcircular with delicate lateral margins; metanotum unarmed medially; propodeum short, with sharp prominent median keel and with prominent bladelike flanges posterolaterally (Fig. 18); sides of propodeum and metapleura glabrous, with only few scattered long setae; metapleural carina distinctly defined, metapleuron with vertical groove anteroventrally; mesopleuron with distinct oblique line; fore wing long, with rather long marginal cilia; submarginal vein short, slightly exceeding basal 1/4 and closely paralleling front margin of wing; basal vein not indicated; hind wing narrow, with submarginal vein reduced to rudiment at base; legs long and strong, with tarsi distinctly compressed, much higher than wide; hind coxa rather large, broadest in basal third, gradually tapering to apex.

Petiole (Fig. 18) in dorsal view subcampanulate, only slightly longer than wide, distinctly constricted anteriorly and with posterior margin sharp, slightly concave; rest of metasoma short, only slightly longer than wide; anterior margin of T2 straight.

Male: Unknown.

Type-species: *Townesella marjoriae*, n. sp. (described below).

Etymology: This new genus is named in honor of Henry K. Townes at the occasion of his life jubilee. The suffix *-ella* is a diminutive in reference to the small size of this wasp. The gender is feminine.

Remarks: This new genus appears to be related to other predominantly smooth-bodied members of known genera of ecitophilic Diapriini (e.g. *Asolenopsia* Kieffer, *Euplacopria* Ferrière, *Labidopria* Wasmann and *Neivapria* Borgmeier) by the following peculiar characters: Female antennae with secondarily nondifferentiated clava, tarsi strongly compressed laterally, body uniformly honey-colored, and petiole more or less specialized. *Townesella* is closely related to *Asolenopsia* because of having an 11-segmented antenna with the apical segment clearly longer than the preceeding ones. However, this new genus differs markedly in the development of body pilosity in that *Asolenopsia* has the temples and the anterior margin of the pronotum with dense tufts, and the propleura, metapleura as well as the dorsum of the petiole hairy. *Townesella*, on the other hand, has no specialized pilosity in these areas, except for the usual scattered semidecumbent setae over all the body and a dense brush of hairs ventrally on the petiole. The closest relative of *Townesella* is probably *Myrmecopria* Ashmead because of the similar shape of the petiole, the elongate head, as well as the general structure of the propodeum. For differences between these two genera, see the key.

2. **Townesella marjoriae**, n. sp. (Figs. 14, 16, 18, 19, 20)

Female: Length 1.7 mm. Honey colored, dorsal part of head and body of metasoma darker and petiole, mesosoma, legs and antennae lighter; eyes and ocelli blackish and all sutures dark brown; wings hyaline.

Head (38:37) smooth and shiny, in dorsal view with eyes subequal to temples; POL:LOL:OOL = 4:5:12.5 (Fig. 16); eyes in lateral view higher than long (19:14), with about 12 by 8 ommatidia respectively; malar space shorter than length of eye (11:14) (Fig. 14); flagellomeres (Fig. 20) with delicate granular microsculpture except for smooth spot on A1 apicoventrally between flanges; A1 reticulate; antennomeres in relative proportions 28:9.5; 9:6; 9:6; 6:7; 6:7.5; 6:8; 6.5:9; 7:9; 7:9; 7:9; 16:9.

Mesosoma somewhat higher than wide (42:38); mesoscutum as long as wide; pronotal shoulders without tuft of hairs but with mat granular microsculpture; suture between axillae and scutellar shield thickened, finely crenulate; axillae and scutellar shield partially with delicate longitudinal microsculpture; propodeum short, shorter than scutellar shield (19:13), steeply sloping, with sharp median keel anteriorly, deeply excavate between long flanges, with granular sculpture; flanges of propodeum semitransparent, finely longitudinally sculptured, in dorsal view divering apically (Figs. 14, 18); metapleuron evenly and coarsely reticulate; marginal cilia of fore wing 1/7 of wing width, surpassing metasoma by half its length; hind coxa (20:14) basally with small patch of coarse sculpturing.

Petiole (16.5:15) entirely roughly reticulate, with sharp posterior margin and with brush of short dense setae ventrally; T2 large, occupying almost entire body of metasoma.

Male: Unknown.

Biology: Unknown; caught in UV light trap in semidesert habitat; presumably associated with army ants.

Variability: The specimens are very uniform in all respects and no substantial variation was encountered.

Distribution: Arizona.

Type material: *Hologype* : Female, USA, Arizona, Molino Basin, Sta. Catalina Mts., August 2, 1978 (C. A. Olson & M. W. Hetz) [USNM]; *Paratype* : 10 F, with same data as in holotype but caught on July 7, 1962 (F. Werner); USA, Arizona, Pima Co., August 30, 1962 (F. Werner & W. L. Nutting); USA, Arizona, Brown Co. Baboquivari Mts., August 4, 1962 (F. Werner & P. Johnson); USA, Arizona, Santa Cruz Co. 10 mi NW Nogales, September 4, 1968 (T. R. Haig) [UAT, USNM, CNC no. 17552, HUGG].

Etymology: This new species is named in honor of Dr. Marjorie Townes, a life time companion of Henry Townes.

3. **Ecitovagus gibbus** Masner 1977 (Figs. 28, 29)

The male of this species was not previously known. It differs from the female in some minor characters.

Male: Length about 2.8 mm. Color and general shape of body as in female; sculpture of mesosoma and particularly of head slightly finer than in female; antennal segments (Fig. 28) in proportions 59:13; 12:9; 22:12; 19:15; 11:14; 11:13; 10:13; 10:12.5; 10:12.5; 10:12.5; 9.5:12; 9:12; 9:12; 9:9; A3 and A4 much modified (Fig. 29); A3 strongly horizontally dilated apically with anteroventral surface flattened; A4 also strongly dilated but vertically, triangular, with exterior surface concave; A5-A13 cup-shaped, proximal ones distinctly asymmetrical exteriorly; A14 much smaller than A13; A1 sculptured as in female; antenna bristly; setae on body, especially on metasoma, distinctly longer, about twice as long as in female; female petiole only with some scattered setae except for anteromedial triangular tuft of adpressed golden hairs; male petiole covered all over with dense yellowish setae, except for sparsely setose anteromedial slightly depressed area; metasoma shorter than in female with more obtuse apex.

Biology: The individuals from Cochise Stronghold are the first record of *E. gibbus* caught in light traps. The alate individuals disperse probably during both day and night, the dealate individuals are probably strictly nocturnal in habits.

Additional material: Female, U.S.A., Arizona, Cochise Stronghold, Dragon Mts., August 16, 1962, Light trap (F. Werner) [Hugg]; 2 M, as above but caught August 21-24, 1969 and August 22-27, 1970, light trap (R. J. Shaw) [CNC and UAT]; dealated F, Arizona, Cochise Co., Chiricahua Mts., Southwestern Research Station nr. Portal, 5400 ft., August 2, 1977, taken from raid column of *Neivamyrmex nigrescens* in night (L. Masner) [CNC]; alate F as above but caught by sweeping plants in daytime on August 3 (L. Masner) [CNC]; dealated F M, Arizona, Cochise Co., Chiricahua Mts., Cave Creek Canyon, SW Research Station nr. Portal, 5500 ft., August 13, 1965, taken from night raid column of *Neivamyrymex* sp. (H. S. Dybas) [M, CNC and F, FMCH].

PLAGIOPRIA, new genus

(Figs. 8, 22, 24, 30, 38)

General habitus of *Ashmeadopria* Kieffer (sensu Sundholm 1960), however differing from the latter in the following characters.

Female: Head more or less globose with antennal shelf prominent; ocelli small, OOL at least 3 x as wide as POL; head clothed with minute hairs but no long setae; head smooth and shiny with some fine longitudinal rugulosity laterally and anteriorly on antennal shelf (Fig. 31); in *P. huberi* this sculpture is spread over most of head as peculiar, very open, finely impressed foveolate reticulation; mouth very narrow; mandibles small, bidentate; palpi short, formula apparently 5-2 (at least in M of *P. passerai* (Fig. 34); antenna 12-segmented, with moderate to indistinct 3-segmented clava (Figs. 22-24); A3 remarkably elongate (in two species), constricted basally, almost as long as A4-A6 combined, but in *P. huberi* only slightly longer than A4; A4-A9 globuliform, constricted basally; scape entirely with fine reticulation, which is pronounced in *P. huberi* and here also confined to pedicel; flagellum clothed with rather long bushy, dense pilosity.

Prothorax strongly developed at shoulders, almost rectangular anteriorly but in *P. huberi* of more usual *Trichopria*-shape; cervical part with massive collar of very dense short pilosity (only as two spots in *P. huberi*); mesoscutum flat, almost triangular, glabrous but in *P. huberi* of a usual *Trichopria*-shape and whole mesosoma with finely regulose sculpture; median part of mesoscutum slightly elevated with shallow median depression; propodeum (Figs. 8, 30) deeply excavate dorsomedially, glabrous in this area; plicae elevated, blade-like, considerably bent inwards and projecting posteriorly into semi-transparent flanges; median keel reduced to a point (in *P. huberi* virtually nonexistent) situated in extreme anterior part of propodeum; hairs on sides of propodeum minute and sparse, not obscuring propodeal spiracles; fore wing with only sparse hairs on basal third, costal cell very narrow; hind wing with incomplete submarginal vein; legs peculiar (Figs. 32, 36), femora gradually incrassate, not abruptly neck-like constricted basally (lateral view), but strongly compressed laterally in basal third with sharp blade-like edges in basal half or more; row of bristles on hind tibiae pronounced (except in *P. huberi*); tarsi more or less compressed.

Petiole smooth and shiny dorsally, not humped, more or less constricted posteriorly (not obvious in *P. huberi*); anterior margin of T2 entire, only slightly wider than petiole; T2 and following tergites with dense adpressed to scattered longer hairs; S2 (ventral view) with two longitudinal deep and broad carinated furrows in basal half.

Male: Similar to female but antenna 14-segmented, flagellar segments each with whorl of errect bristles and A4 not modified (Fig. 33).

Type-species: *Plagiopria passerai*, n. sp. (described below).

Etymology: The prefix *Plagio*- (meaning to steal) is derived from the name of the host ant, *Plagiolepis pygmaea*; the suffix *-pria* meaning the wasp. The gender is feminine.

Remarks: *Plagiopria* is a highly specialized member of the *Trichopria*-complex in the tribe Diapriini. From *Trichopria s. l.* it is distinguished by the following peculiar character states: the sculpture of A1, the pilosity of flagellum and the shape of A4-A9; the structure of propodeum and petiole; the shape of legs, hind tibia in particular; the deep grooves on S2. *Plagiopria passerai* is the first known diapriine associate of the ant genus *Plagiolepis* Mayr (Formicidae).

There are three species of *Plagiopria* known to us, of which *P. passerai* and *P. besucheti* seem to form one group and *P. huberi* another group (see the key). *P. huberi* is certainly the most aberrant species, however, creation of an independent genus for it at this moment does not seem justified because there may be more as yet unknown species in considering the extensive distribution of the ants of the tribe Plagiolepini, mainly in the Old World tropics (Brown 1973, personal communication).

KEY TO THE KNOWN SPECIES OF PLAGIOPRIA

1. Head and mesosoma predominantly sculptured; A1 and A2 with pronounced reticulation (Fig. 22); A3 only 1.7 x as long as wide; flagellum broadest

proximally, clava inconspicuous and all antennal segments irregular in outline; prothoracic shoulders not conspicuously angular; propodeum without median carina; hind tibiae much narrowed in basal half, compressed (Fig. 36); metasoma with scattered short hairs (Fig. 37); yellowish brown (Iran). (F) . . . . 6. *Plagiopria huberi*, n. sp.

Head (except for antennal shelf) and mesosoma smooth; only A1 more or less reticulate (Figs. 23, 24); A3 at least 2.5 x as long as wide; flagellum broadest anteriorly, clava rather distinct and antennal segments smooth in outline; prothoracic shoulders angular; propodeum with hump-like median carina (Figs. 8, 30); hind tibiae wide, subparallel with short neck in basal sixth (Fig. 32) metasoma with hairs as in Figs. 30, 37; chestnut brown 2

2. T2 with dense short pilosity, laterally to lateroanteriorly directed apically (Fig. 30); petiole with long hairs laterally; scape with fine but distinct reticulation (Fig. 23); exterior margin of mid tibiae slightly sinuate; pronotum in dorsal view with several hairs on each side close to scutal suture (France, Italy). (M, F) . . . . . 4. *Plagiopria passerai*, n. sp.

Metasoma with only scattered long setae (Fig. 35); petiole with short hairs laterally; scape delicately longitudinally reticulate (Fig. 24); exterior margin of mid tibiae more sinuate; pronotum in dorsal view with only two hairs on each side at scutal suture (Turkey). (F) . . . . 5. *Plagiopria besucheti*, n. sp.

4. Plagiopria passerai, n. sp. (Figs. 8, 23, 30-34, 38)

Female: Length about 2.0 mm. Color chestnut brown with sutures and edges darker, as head and metasoma; wings slightly yellowish.

Head in dorsal view globose (Fig. 30) (34:35) with rather conspicuous ridge between antennal sockets; head with rather dense minute hairs and pilosity on temples rather sparse; eyes small, shorter than temples, glabrous; ocelli close together, POL:LOL:OOL = 4:4:15; head in lateral view (Fig. 31) slightly longer than high (38:33), space between front orbit and apex of antennal shelf with fine longitudinal rugulosity; eyes subcircular, subequal to malar space; antenna (Fig. 23) with segments in proportions 35:7; 6:6; 13.5; 5:6; 5:6; 5:6; 5:6.5; 5:6.5: 5.5:7; 9:8; 10:8.5; 10:7; A12 conspicuously narrower than A11 and reticulation on scape pronounced; palpi very small, maxillary palpus with very short apical segment.

Mesoscutum distinctly wider than long (32:45), with setae placed as in Fig. 30; scutellar pit shallow, transverse, scutellar shield almost parallel-sided with median carina hardly indicated and lateral margins fine; propodeum rather long and narrow with some longitudinal wrinkles on projecting semihyaline flanges (Figs. 8, 30); fore wing (Fig. 38) sparsely hairy on disc in proximal third, with about 12 short bristles on submarginalis + marginalis; marginal cilia slightly more than 1/8 of wing width; hind wing with cilia about half as long as wing width; tarsi short, slightly compressed; femora basally at constricted part with short, narrow, sharp edges, especially on ventral side (Fig. 32); exterior margin of mid tibia slightly sinuate; hind tibiae wide, subparallel with short neck in basal sixth and sharp interior edge medially.

Petiole (18:12) slightly excavate anterodorsally, with tufts of long hairs laterally; body of metasoma about 1.7 x as long as wide; T2 (32:23) covered by dense minute hairs, in apical fifth directed laterally to anterolaterally (Fig. 30); last tergite triangular, pointed.

Male: Length about 2.0 mm. Color as in female but head and metasoma slightly darker than in female.

Head as in female but antennal shelf smooth and less pronounced; eyes somewhat larger; antenna (Fig. 33) with segments in proportions 33:6; 6:5; 16:4; 14:5; 13:5; 12:5; 12:5; 12:5; 12:5; 12:5; 12:5; 12:5; 11:5; 16:4; A4 not modified; antenna slightly longer than body; flagellar segments with whorl of erect bristles, which are clearly shorter than length of segments.

Mesoscutum as in female but laterally bent propodeal flanges slightly wider apart; wings as in female but legs more slender with less pronounced sharp edges and appearing less compressed.

Petiole and metasoma subequal to that of female but pilosity of T2 sparser and two-directional pilosity apically on T2 less expressed.

Biology: The specimens from Montricoux (France) were reared from pupae of queens of *Plagiolepis pygmaea* (Latr.) (Formicidae) (L. Passera, *in lit.*).

Variability: In the material studied no variation of any importance could be encountered.

Distribution: S and E France, northern half of Italy.

Type material: *Holotype* : Female, *France* (T. & G.) Montricoux, September 11, 1973 (L. Passera) [CNC No. 15596]. *Paratypes*: 5 F, 2 M. 1 F with same data as holotype except the date, September 2 [CNC]; 2 F with same data as first paratype [Hugg and LPT]; 1 F, *France*, Hte. Savoie, Grande Saleve, April 26, "Hymenoptere chez fourmis" [MHN]; 1 F, *Italy*, Veneto, Monte Berici, February 20, 1972 (R. Pace) [MCV]; 1 M, *Italy*, Umbria, Monte Peglia, Marsciano, August 9, 1979 [Hugg]; 1 M, Puglia, Monte Gargano, Foresta Umbra, August 8, 1979 (both L. Huggert) [Hugg].

Etymology: The new species is named in honor of Dr. Luc Passera (Laboratoire d'entomologie, Universite Paul Sabatier, Toulouse, France) who discovered this highly interesting diapriid during his observations on myrmecophilic Diapriinae in France.

5. **Plagiopria besucheti**, n. sp. (Figs. 24, 25)

Female: Length 2.1 mm. Color dark chestnut brown with legs and antennae yellowish.

Head dorsally (39:35) and laterally as in *P. passerai*, but pilosity on head much sparser and hairs slightly longer; space between antennal shelf and front orbits less longitudinally rugose; antenna (Fig. 24) with segments in proportions 40:8; 10:6; 15:5.5; 6:7; 6:7; 6:7; 7:8; 7.5:8.5; 8:9; 11.5:10; 12:10; 13.5:8; A12 clearly narrower than A11; flagellum slightly more robust and scape less reticulate than in *P. passerai*.

Mesosoma basically as in previous species; sides of pronotum in dorsal view slightly more concave; only with two setae on pronotum close to scutal suture; mesoscutum anteriorly conspicuously more bluntly rounded; scutellar pit very shallow, almost inconspicuous and virtually without median carina on shield; propodeal flanges without wrinkles; legs more or less as in previous species but mid tibia clearly more sinuate.

Petiole hardly longer than wide, slightly excavate anterodorsally, with much shorter hairs laterally than in *P. passerai* and a fine longitudinal depression laterally (Fig. 35); body of metasoma about 1.7 x as long as broad; T2 (85:57) with only some few scattered long setae, all directed posteriorly (Fig. 35).

Male: Unknown.

Biology: Unknown.

Distribution: Turkey.

Type material: *Holotype*: Female, Turkey, Ordu, "Env. d'Ordu", May 17, 1967 (C. C. Besuchet) [MHN]. The following parts of the body are missing: fore and hind wings, apical trasomere of left fore tarsus and most of left hind tarsus. Right antenna on slide.

6. **Plagiopria huberi**, n. sp. (Figs. 22, 36, 37)

Female: Length 2.0 mm. Color uniformly yellowish brown; wings hyaline.

Head in dorsal view globose (40:35) with prominent antennal shelf, rim-like produced foreward and slightly concave medially; distinct longitudinal ridge between antennal sockets; pilosity on temples sparse, indistinct; eyes small, shorter than temples, glabrous, raspberry-like, with rather large omatidia; ocelli close together POL:LOL:OOL = 5:5:12; frons slightly concave; ocellar area somewhat elevated, with reticulation; head with scattered minute hairs; in lateral view head triangular and space between orbits and apex of antennal shelf with pronounced irregular reticulation extending down face; rest of head shiny but with large-scaled, foveolate, shallow sculpture; eyes small, subcircular, eye height slightly greater than malar space; hypostomal carina lamelliform, pronounced; mouth small; palpi very short; antenna (Fig. 22) peculiar in having distal funicular segments narrower than proximal ones and clava inconspicuous; A2 - A12 remarkably irregular in outline; antennal segments in proportions 40:9; 10:7.5; 10:6.5; 8:7.5: 8.7; 8:7; 8:6.5; 7:6; 8:6; 9:7; 9:7; 12:6; scape and also pedicel with strong reticulation; A3 much shorter than in previous two species and flagellum bristly.

Shoulders of prothorax more rounded, hardly angularly protruding; pronotum with dense but small collar of greyish pilosity and in dorsal view with 5-6 hairs on each side near scutal suture as in Fig. 30; mesoscutum posterolaterally (near tegular) and two anteromedial depressions shiny, rest of mesoscutum with irregular, foveolate, longitudinal reticulation; mesoscutum submedially on each side with irregular row of some short hairs; scutellar suture distinct, rim-like; scutellar pit semicircular, wide, with rim-like anterior margin and pit fan-like costate; scutellar shield parallel, finely margined laterally, with distinct but delicate lamella-like edge posteriorly; scutellum with irregular foveolate sculpture, less so on axillar parts and with delicate median carina in posterior half of shield; blade-like flanges of propodeum slightly shorter than in previous two species and median keel absent; sides of mesosoma with same sculpture as on mesoscutum; fore wing as in *P. passerai* but disc slightly denser pilose and apical cilia very short, only about 1/14 of wing width; hind wing with cilia short, about 1/3 of wing width; tarsi not particularly short (Fig. 36), distinctly compressed; femora and tibiae compressed, femora with blade-like edges in basal half; tibiae much narrowed basally compared to the other two species, club-shaped, gradually incrassate towards apex, with delicate ventral and dorsal edges medially; row of comb-like bristles on hind tibia less pronounced and mid tibia somewhat club-like sinuate.

Petiole in dorsal view slightly wider than long (14:20), with rather bulging sides, slightly narrowed anteriorly and here with fine margin; petiole laterally with rather distinct longitudinal groove on each side and with fine pilosity all over, longer at sides (Fig. 37); body of metasoma 1.5 x as long as wide; T2 (67:58) with scattered short hairs; S2 with broad median tongue bent downwards anteriorly, bordered by short grooves.

Male: Unknown.

Biology: Unknown.

Distribution: Iran.

Type material: *Holotype*: Female, Iran, Tehran Prov., 8 km W Konchor, July, 1978 (J. T. Huber) [CNC No. 17656] (left antenna on slide).

Remarks: *Plagiopria huberi* differs distinctly from the other two species in the structure of the antenna, legs and general sculpturing of the head and mesosoma. This species exhibits several features paralleling character states encountered among numerous New World ecitophilous diapriines, *viz*. body usually light colored (xanthic or rufous), more or less sculptured, tarsi distinctly compressed laterally and antenna without distinct clava.

Etymology: This new species is named in honor of Mr. John T. Huber (University of California, Riverside), who collected this wasp in Iran.

7. **Trichopria myrmicae**, n. sp. (Figs. 39-49)

Female: Length 2.4 mm. Black; legs entirely rufous, mandibles and antennae rufous, with tips of mandibles and clava slightly darker; wings hyaline.

Head in dorsal view globose; antennal shelf only slightly protruding; temples rounded, subequal to length of eye; POL:LOL:OOL = 11:6:18; head in lateral view with eyes small, oval (15:23), about 2.5 x longer than malar space; genae and temples with think greyish pilosity; hypostomal carina prominent; palpal formula 5-2 (Fig. 40); head in frontal view subcircular with very wide mouth, almost as wide as head; genae very short; mandibles unusually large, unequal, with strong lower tooth and truncate upper one; right mandible with upper tooth subbidentate (Fig. 43); clypeus with pronounced, deep transverse cleft right above lower margin; face below antennal shelf with long bristles in setigerous punctures, head otherwise with remarkably short hairs; antenna (Fig. 39) notably short compared to body, hardly reaching hind margin of propodeum; flagellar segments short, clava 3-segmented; A1 to A12 in proportions 34:8; 9:5.8; 9:5.5; 6:5.5; 6:5.8; 6:5.8; 6:6; 6.5:6; 6.5:6.2; 10:9; 10:9.5; 14:9; flagellar pilosity rather dense, shorter than width of segments.

Prothorax with thick collar of greyish pilosity anteriorly (Fig. 44); setae on mesoscutum unusually short, two placed in front of tegula and two, very close to each other, placed about in middle on each half of mesoscutum; axillae with group of 4-5 short hairs; scutellar pit transverse, lunate, with two deeper pits laterally and these pits with some striae; scutellar shield strongly convergent posteriorly, moderately arched with a strong median carina in posterior 2/3; sides of scutellum with strong rim; median keel of metanotum much elevated (Figs. 45, 46); propodeal plicae distinct and median keel anteriorly elevated; propodeum and metapleura covered with dense long whitish hairs; sides of pronotum below tegula with group of 5-6 short hairs; mesopleura in lower quarter with arc of 6 erect hairs; fore wing with about 20 short setae on submarginalis + marginalis and wing proximally with rather dense hairs (Fig. 41); longest marginal cilia about 1/8 of wing width; hind wing with cilia almost half of wing width; legs unusual, femora strongly incrassate with sharp edge ventrally; posterodorsal apex of fore tibia with remarkably long, strong, curved spine (Fig. 47); inner margin of hind tibia with very well developed row of dense, stiff bristles.

Petiole slightly longer than wide, completely covered by long greyish hairs; body of metasoma (45:25) and T2 (33:25); T6 triangular and apex of metasoma sharply pointed, due to projection of ultimate tip of last sternite; T3-T5 medially with transverse band of dense micropunctures (160 x), which under magnification of 1600 - 4000x appear as rows of pegs (Figs. 48, 49).

Male: Unknown.

Distribution: USA (New York, St. Lawrence River Valley).

Biology: This is the first known diapriid associate of ants of the genus *Myrmica*. All individuals were collected under stones in nests of *Myrmica* ? *americana* Weber (det. L. Huggert) situated on open, south-facing, grassy slopes on limestone. Only one or occasionally two individuals of *T. myrmicae* were found per nest. Wasps were found only in about 20% of the examined nests and they were seen moving slowly amidst the ants. However, the ants did not seem to pay any particular attention to the wasps. One wasp was brought into the laboratory for further observation in a formicarium. Again, it was ignored by the ants. Similarly, we failed to observe any case of petting or trophalaxis but also no hostility towards the guest. We found it interesting that the individuals of *T. myrmicae* occur in nests with grown larvae (? L2) of the host ant. This also agrees with our experience with *Auxopaedeutes* spp. associated with *Solenopsis* ants. Prior to the appearance of larvae of *Solenopsis*, no individual of *Auxopaedeutes* wasps was observed in the nests.

Variability: Very little variation has been noticed among the 12 individuals except for the body size that varies between 2.3 - 2.6 mm.

Type material: *Holotype*: Female, U.S.A. (New York), Alexandria Bay, April 25, 1978 (L. Huggert), palpi on slide [CNC no. 15595]. *Paratypes*: 4 F, same data as holotype and also of April 23, 1 F gold-coated, with antenna and wings on slide [CNC]; 1 F, same data as holotype [USNM]; 6 F, with same data as holotype and of April 23 [Hugg].

Remarks: In Kieffer's (1916) classification, *T. myrmicae*, n. sp. would fall into *Ashmeadopria* Kieffer, which more recently has been considered a synonym of *Trichopria* Ashmead (Sundholm 1960). However, this new species appears quite peculiar among all Holarctic species that we classify in the current concept of *Trichopria*. The following combination of these peculiar character states is considered important for the recognition of the new species: remarkably short antennae compared to the large size of the body; unusually short setae and their configuration on the vertex and mesothorax; very wide mouth, broad clypeus and consequently long and powerful mandibles; all the femora strongly incrassate and sharply edged ventrally; long, curved spine on the dorsal apex of the fore tibiae; the row of bristles along the inner side of the hind tibiae unusually pronounced.

Since the present taxonomy of the genus *Trichopria s. l.* in North America is not satisfactory, it is virtually impossible to classify this new species more precisely. However, *T. myrmicae* differs remarkably in the character states mentioned above from all species of *Trichopria* in North America, Europe and Africa, the types of which we have studied.

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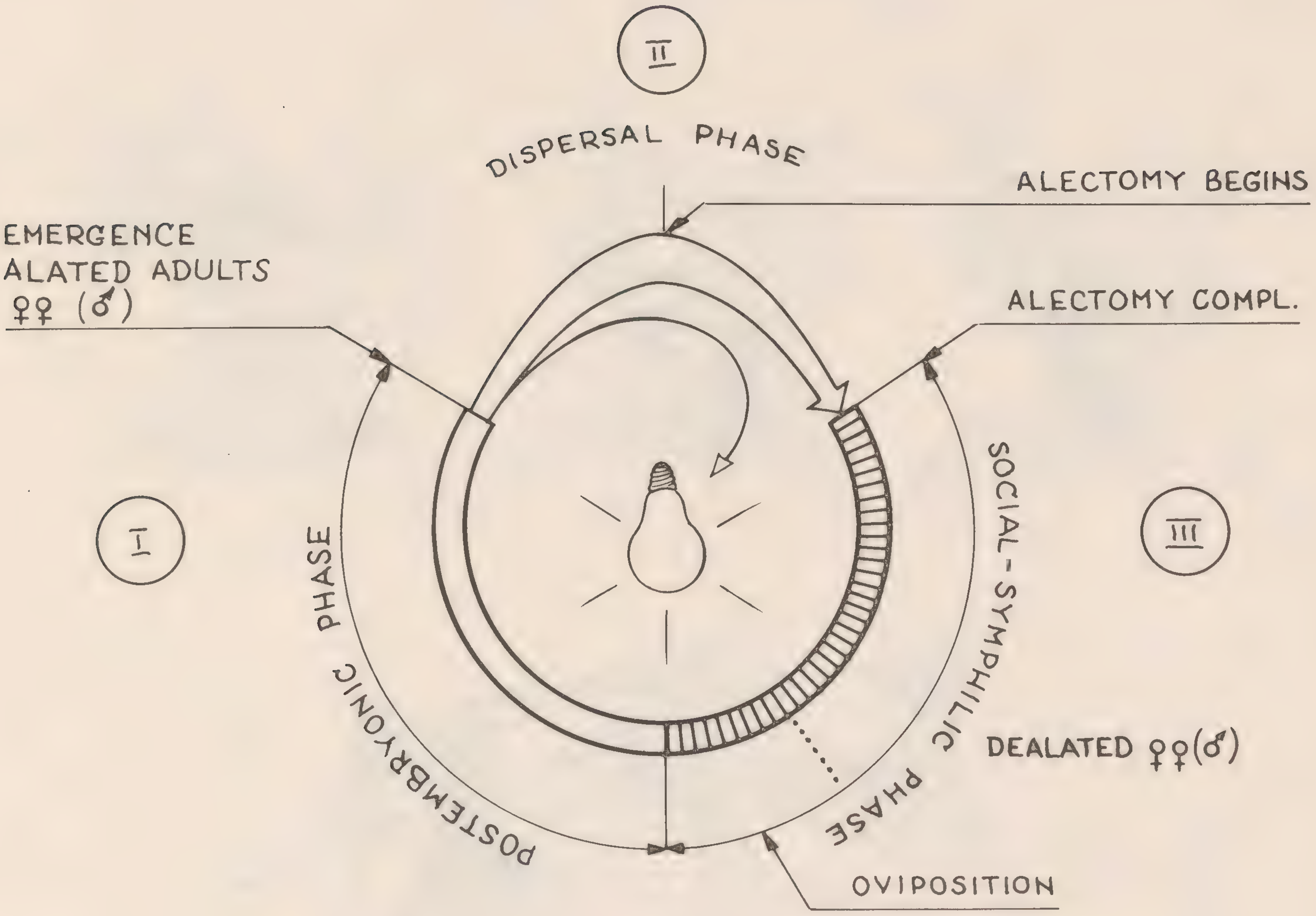

Fig. 1. General scheme of the life cycle of symphilic diapriid wasps associated with ecitonine ants.

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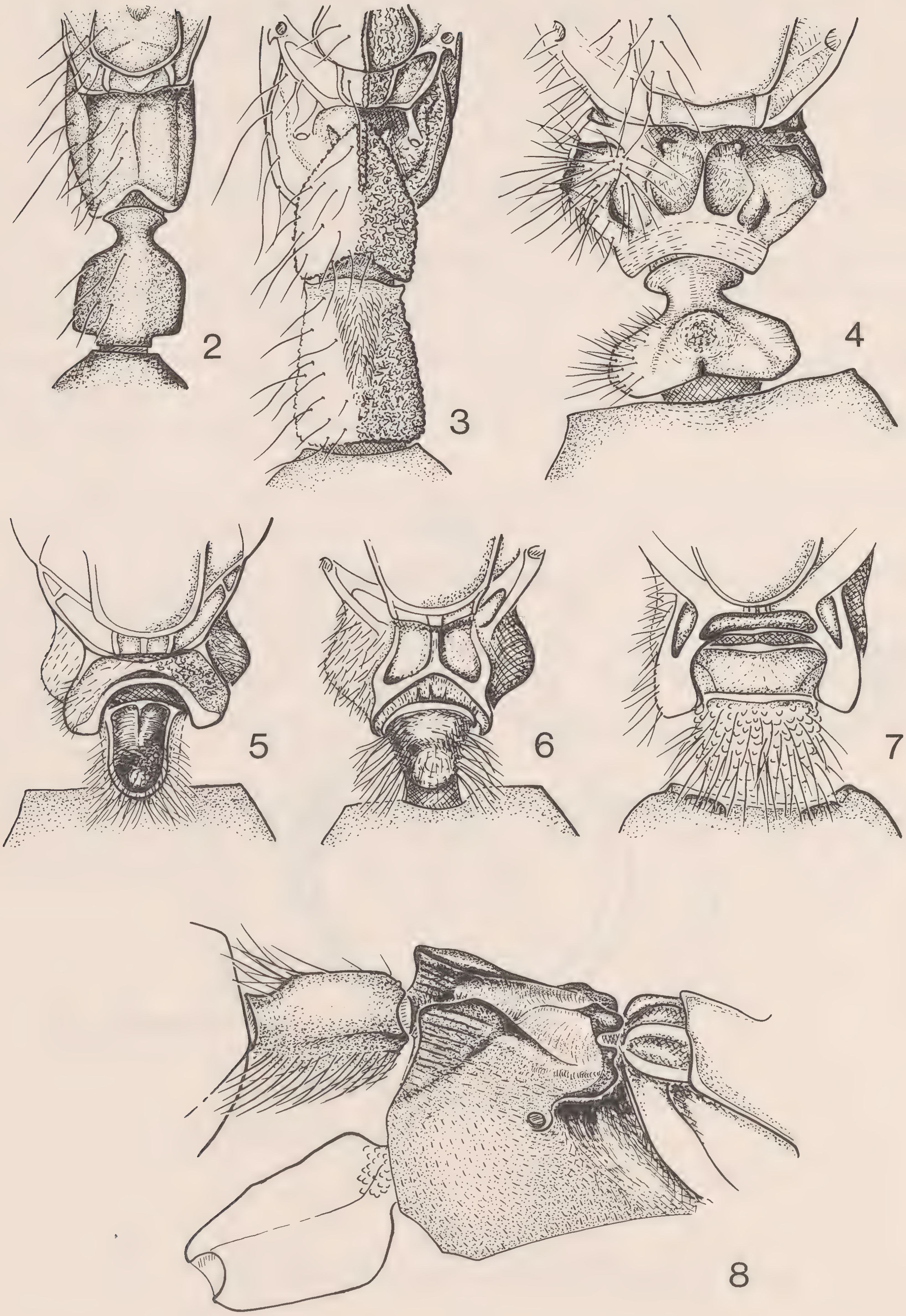
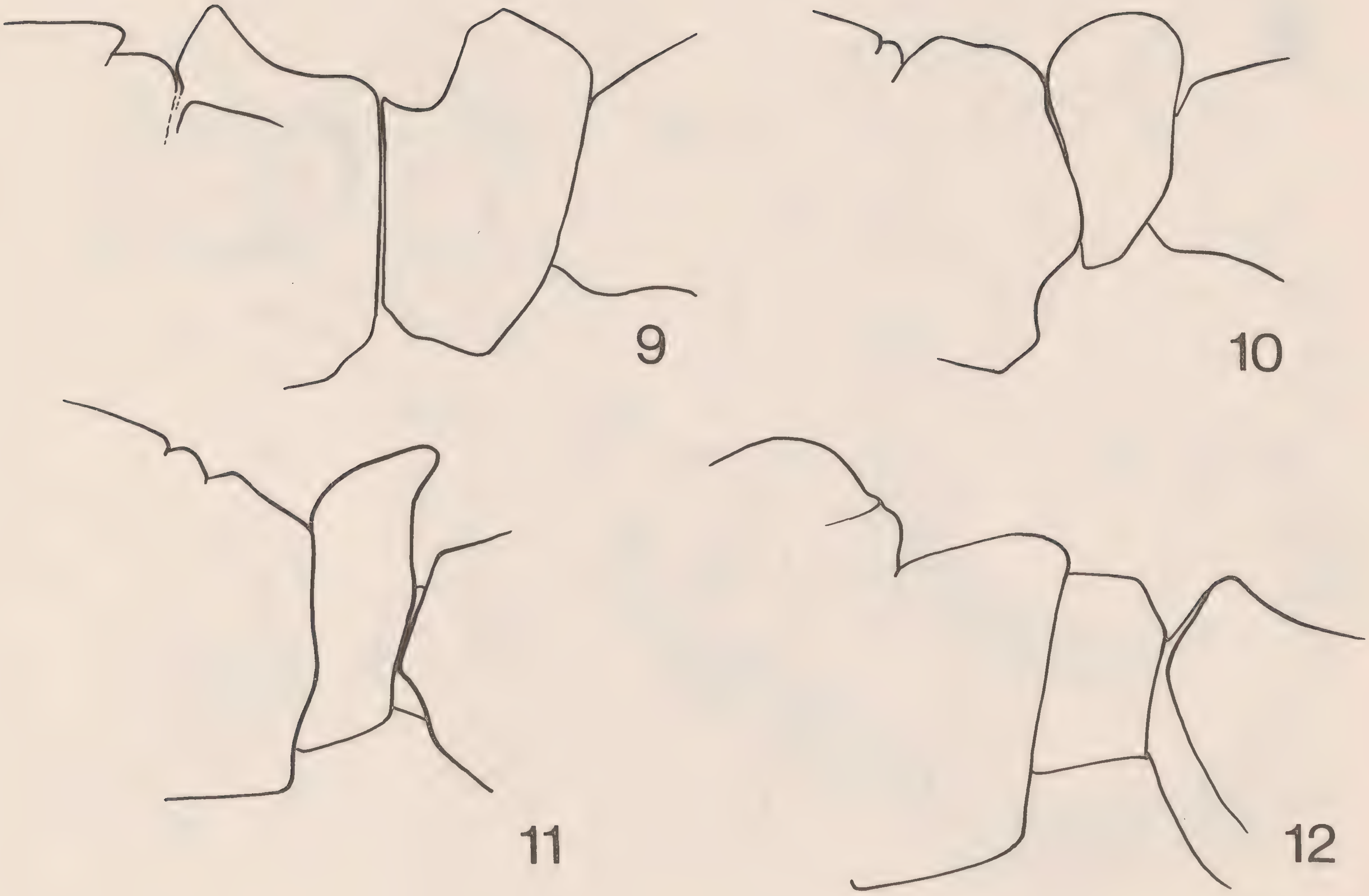
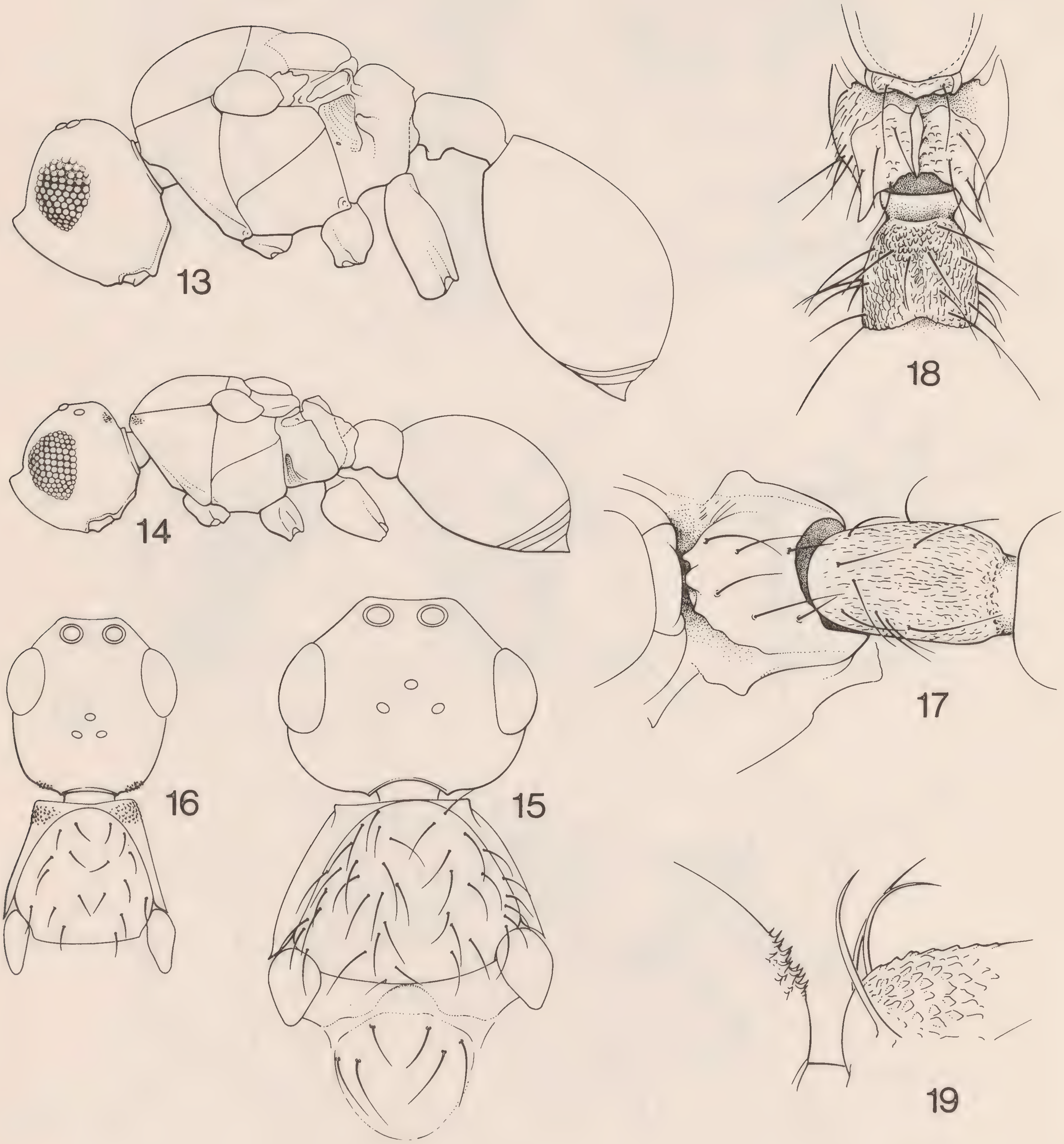


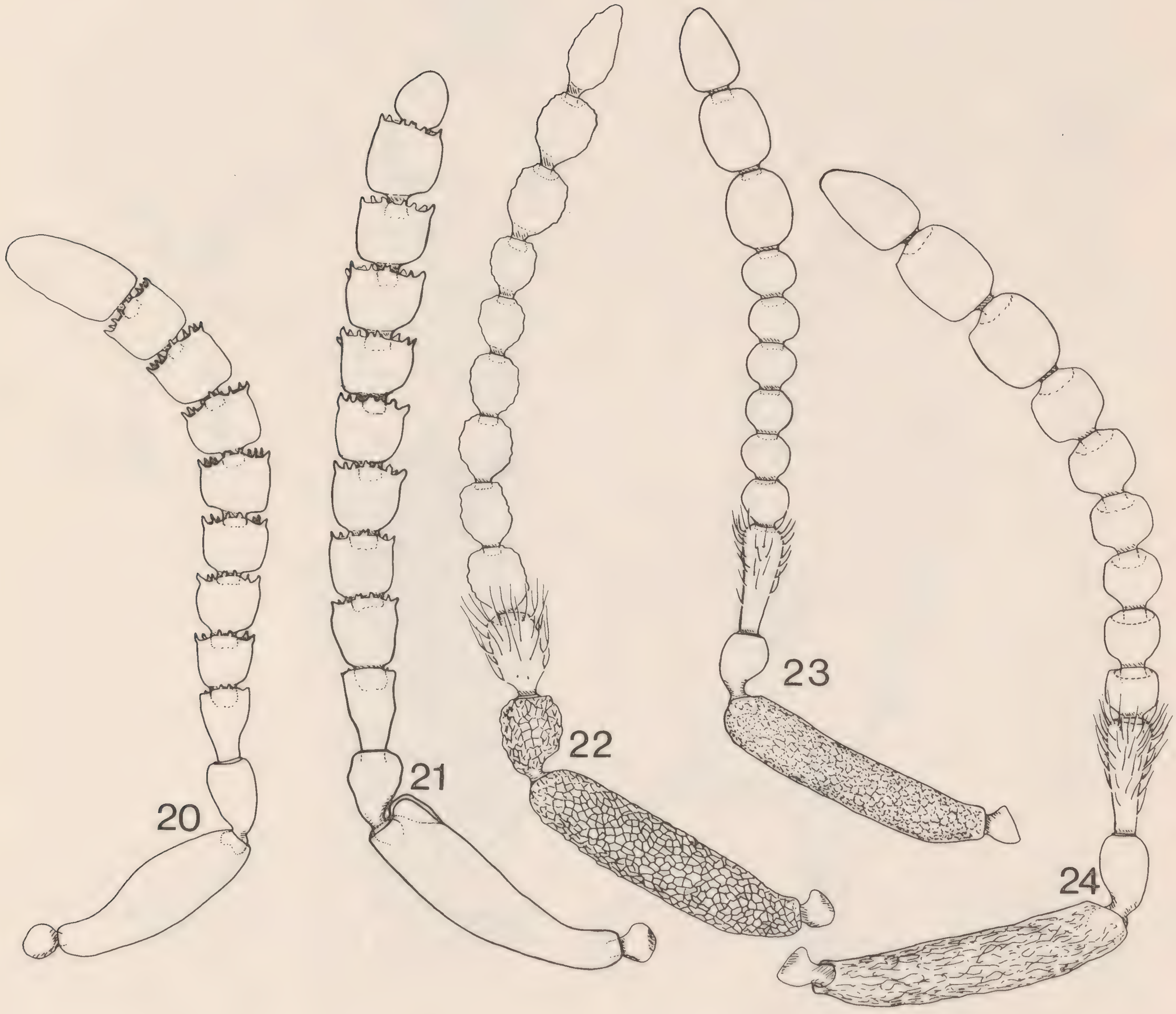
Figs. 2-8. Petiolar region, females. 2, **Myrmecopria mellea** Ashmead. 3, **Ecitovagus gibbus** Masner. 4, **Solenopsia imitatrix** Wasmann. 5, **Bruesopria** sp. 6, **Lepidopria pedestris** Kieffer. 7, **Auxopaedeutes** sp. 8, **Plagiopria passerai**, n. sp.



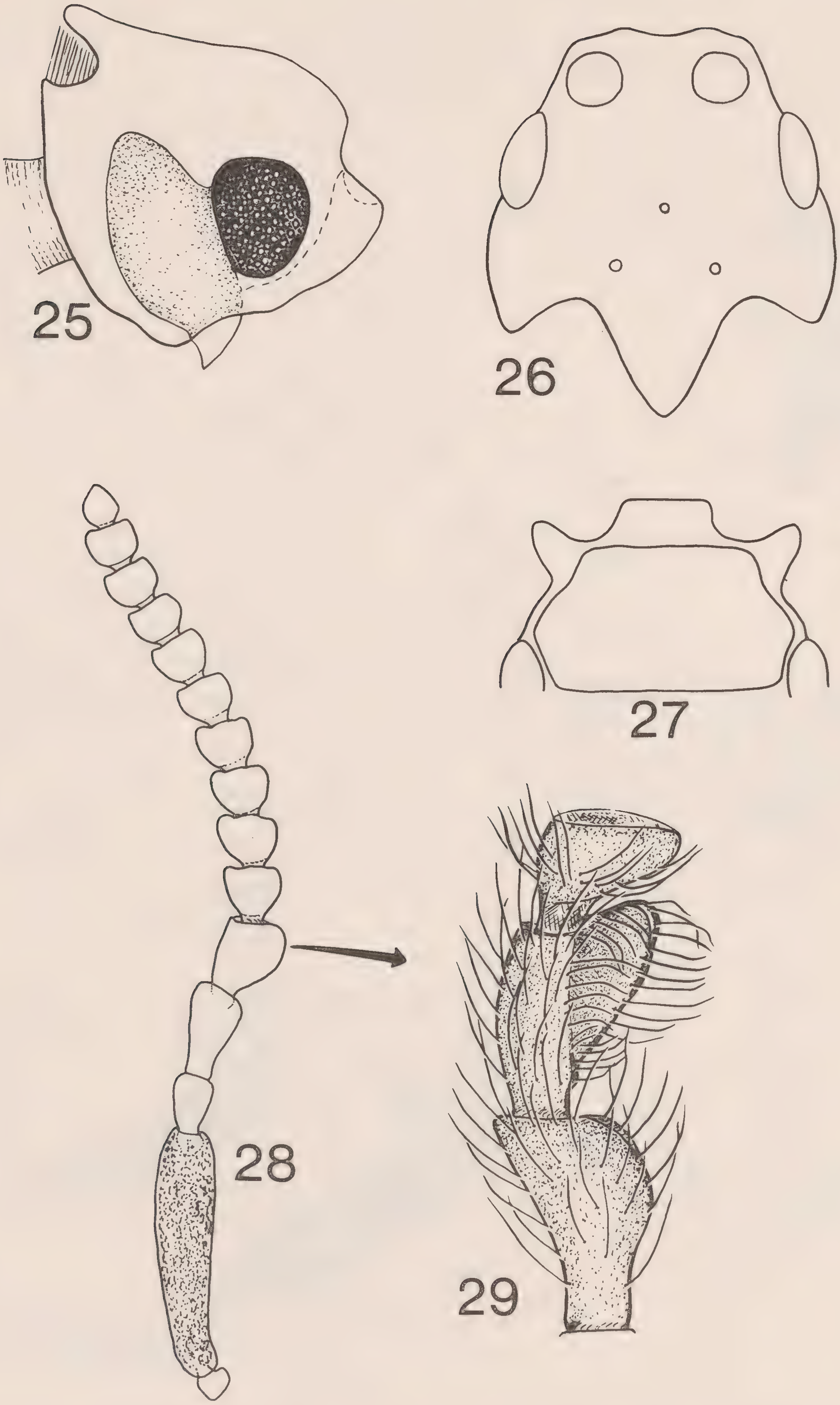
Figs. 9-12. Lateral view of female petiolar region (Schematic). 9, **Solenopsia imitatris** Wasmann. 10, **Lepidopria pedestris** Kieffer. 11, **Bruesopria** sp. 12, **Auxopaedeutes** sp.



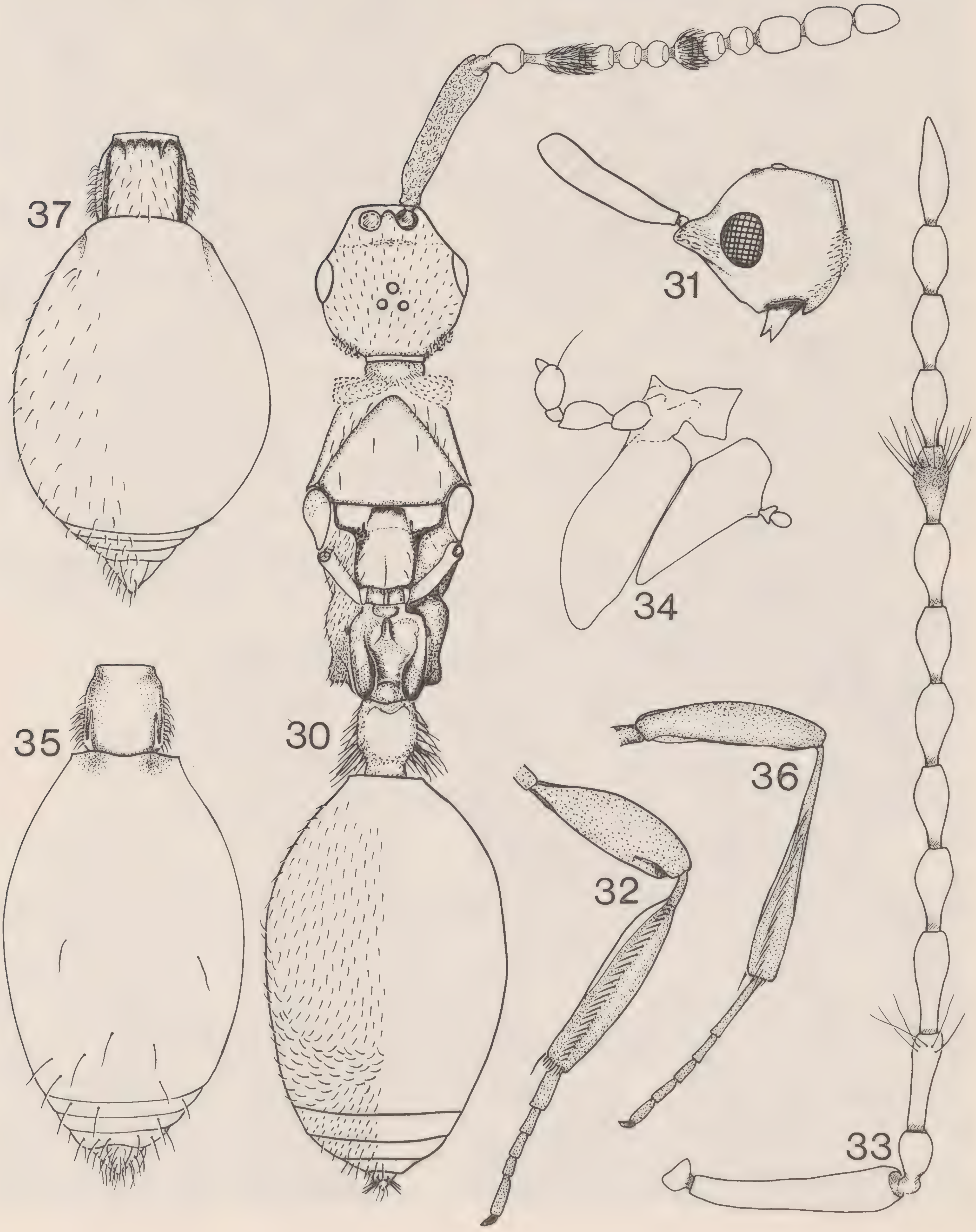
Figs. 13-19. **Labidopria noctivaga**, n. sp. F. and **Townesella marjoriae**, n. gen. et sp., F. 13, **L. noctivaga**, lateral view. 14, **T. marjoriae**, lateral view. 15, **L. noctivaga**, dorsal view. 16. **T. marjoriae**, dorsal view. 17, **L. noctigava**, petiolar region (oblique view). 18, **T. marjoriae**, potiolar region (dorsal view). 19, **T. marjoriae**, temple and pronotal shoulder (oblique view).



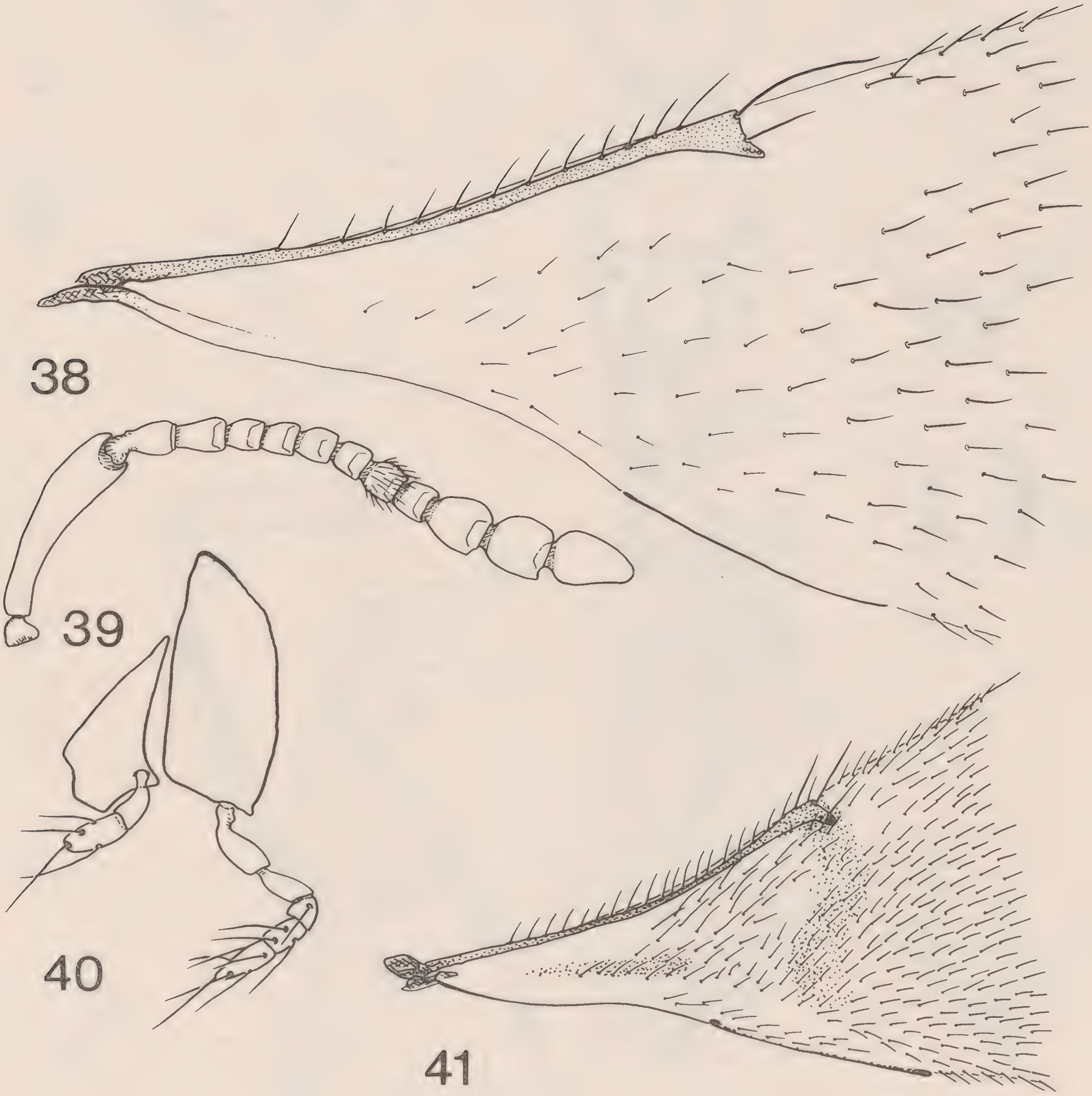
Figs. 20-24. Female antennae: 20, **Townesella marjoriae**. 21, **Labidopria noctivaga**. 22, **Plagiopria huberi**, n. gen. et sp. 23, **P. passerai**, n. sp. 24, **P. besucheti**, n. sp.



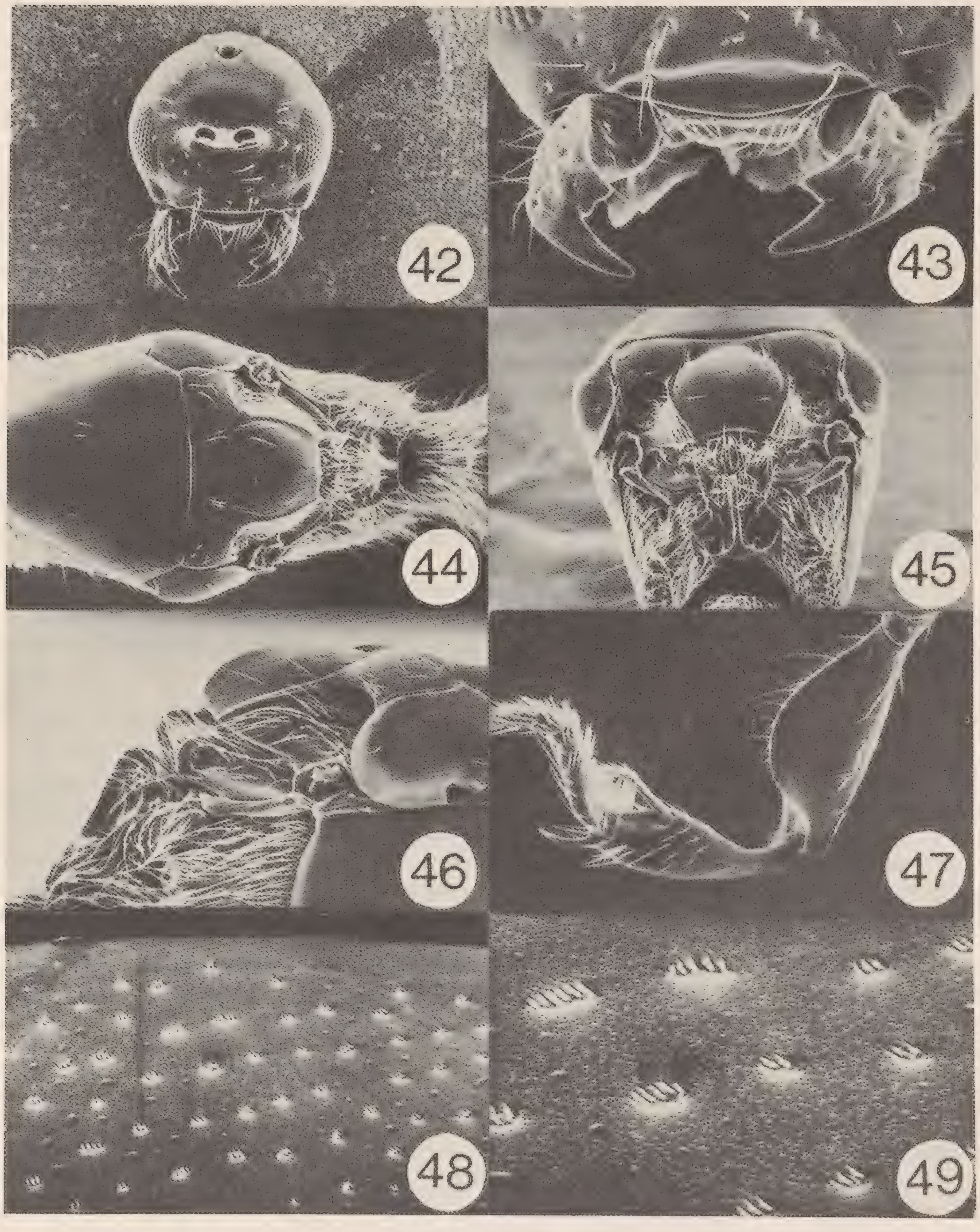
Figs. 25-29. **Cordylocras mirabilis** Kozlov, F. and **Ecitovagus gibbus** Masner, M.: 25, **C. mirabilis**, head lateral view. 26, **C. mirabilis**, head dorsal view. 27, **C. mirabilis**, pronotum and mesoscutum, dorsal view (after Kozlov 1966, modified). 28, **E. gibbus**, antenna. 29, **E. gibbus**, A3-A5.



Figs. 30-37. **Plagiopria,** n. gen. M,F: 30, **P. passerai,** F, body. 31, F. head lateral view. 32, F. hind leg. 33, M. antenna. 34, M. palpi. 35, **P. besucheti**, F. metasoma. 36, **P. huberi,** F. hind leg. 37, **P. huberi**, F. metasoma.



Figs. 38-41. **Plagiopria passerai**, n. gen. et sp. F. and **Trichopria myrmicae**, n. sp. F.: 39, **P. passerai**, base of fore wing. 39, **T. myrmicae**, antenna. 40, **T. myrmicae**, palpi. 41, **T. myrmicae**, base of fore wing.



Figs. 42-49. **Trichopria myrmicae**, n. sp. F.(SEM coated specimen): 42, Head (104 x). 43, Mouth (256 x). 44, Mesosoma dorsal view (132 x). 45, Propodeum, posterior view (157x). 46, Scutellum-propodeum, lateral view (224 x). 47, Fore leg (233 x). 48, Microsculpture, apex of T2 (1640 x). 49, Microsculpture,apex of T2 (4040 x).